THE VETERINARY RECORD

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EDITED BY WILLIAM HUNTING, F.R.C.V.S.

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SIR STEWART STOCKMAN.

It has been well said that "Years are not the measure of experience." Stockman has only been a member of his profession for 23 years, but he has been almost providentially enabled to cram into that time a most extensive and varied experience. After taking his diploma in 1890 he availed himself of opportunities to act as assistant or locum tenens in two or three of the largest practices in the North, and so obtained practical experience of the ordinary everyday details of veterinary practices. Then he acted as teacher of pathology at Dick's College, and attained the position of an expert in this branch of science.

In 1901 he was appointed to the Indian Civil Veterinary Department, where Rinderpest and other cattle diseases enabled him to gain experience which was not available in this country.

A short residence in India was followed by his removal to South Africa, where again his experience of disease was widened, and he was brought into direct contact with Lord Milner. When Mr. Cope was retiring from the Board of Agriculture, it is said that Lord Onslow was looking for a first class man to take his place. He was told that some of the best veterinarians were to be found in the over-sea dominions, and as he personally knew Lord Milner he cabled out to inquire if there was a man in South Africa to fill the place in Britain of Chief Veterinary Officer. Lord Milner replied that they had the very man, and so Stewart Stockman followed Mr. Cope at the Board of Agriculture. That the selection was a good one has been proved by results. If Stockman had never been abroad he would have seen little if anything of Rinderpest, Pleuro-pneumonia, and Foot-and-mouth disease, all of which had disappeared years ago from Great Britain.

Independently of his practical clinical knowledge of important diseases, Sir Stewart Stockman has always been a scientist—a practical bacteriologist—and he thus, by his opportunities and his acquirements, entered the Board of Agriculture well equipped for his work.

Since his appointment as Chief Veterinary Officer to the Board he has never slackened. In addition to his advisory and administrative work he has conducted researches into Scab, Anthrax, Glanders, Tuberculosis, Contagious abortion, and parasitic diseases of sheep and cattle. To each he has added knowledge or eliminated error.

As professional adviser to the Board he has recently had a trying time, for it must be remembered that upon his opinion depended action which affected the trade in animals all over the Kingdom. The cost of the recent outbreaks of Foot-and-mouth disease has probably reached over £1,000,000, if we include loss of trade and stoppage of the export of cattle. This is a big burden to carry, and Stockman has successfully faced all the difficulties. We congratulate him upon his success, and acknowledge that no man has more deserved the honour of knighthood than he. Long may he be preserved to us to guide and direct the legislation against diseases of animals.

THE DINNER TO PROF. WOODRUFF.

The complimentary dinner to Prof. Woodruff, held on Wednesday evening last at the Trocadero, proved a complete success. The attendance numbered about fifty, gathered from most parts of the country, and including teachers, examiners, and councilmen, as well as many private practitioners. Very appropriately, considering the interest that Prof. Woodruff has always taken in veterinary work in relation to public health, the Meat Trades' Federation and *The Meat Trades Journal* were both represented—the former by its secretary and past president. Otherwise, the gathering consisted almost exclusively of veterinary surgeons, assembled to bid farewell to a colleague and a friend.

The toast list was short, being limited to "The King" and "Our Guest." Mr. Hunting, the Chairman, in proposing the latter, paid well deserved tribute to Prof. Woodruff's professional and personal qualities alike—we all know both, so there is no need to epitomise the chairman's utterances. He concluded by performing a duty which had not been advertised—the presentation to the guest of a piece of plate, privately subscribed for by friends.

Prof. Woodruff's reply was delivered with the quiet sincerity that we have all learned to recognise as characteristic of the man. Not very lengthy, it was marked by felicity of expression and evidence of deep underlying feeling; and it struck the note that dominated the evening. The company was swayed by mixed feelings—regret that Woodruff was going, and cordial good wishes for his future. The speech, which showed that the regret was mutual, and reciprocated the good wishes, was in perfect sympathy with the prevailing mood.

During the evening a variety of voluntary contributions to its enjoyment were made. There were speeches from Mr. Lindsay, past President of the Meat Traders' Federation, who spoke of Professor Woodruff's assistance to meat salesmen in their past and present difficulties, and from Mr. Cherry, a Colonial graduate, who promised the guest a welcome in Australia.

Music and other entertainment was also provided by Messrs. Chamberlain, Woods, Peacey, Wooldridge, Carter, and last, but not least, by the guest himself, who, in addition to his other accomplishments, can sing a good song. With the singing of "Auld Lang Syne," a meeting of genuine good fellowship was brought to a close. Despite the undercurrent of regret that was never entirely absent, we think that the evening will always be a pleasant memory to one man in Australia, as it certainly will to many in England.

WOUND DRESSING INSTRUMENT.

With the advent of the Iodine treatment for wounds, the want of some small instrument for applying the same must have been felt by those who adopt this method of treatment. Herewith is a sketch of a "wound dressing instrument," made for me to my own design. A small piece of cotton wool or tow is wrapped round the roughened end

of the instrument, and the Tincture of iodine is applied therewith. I consider it meets a daily want in veterinary surgery, and that it will enable practitioners to adopt the Iodine treatment in a neat and aseptic manner.

The instrument is manufactured by Arnold and Sons, London.

W. A. Pallin. Major, A.V.C.

Harrismith, S. Africa.

ABSTRACTS FROM FOREIGN JOURNALS.

The Mallein Ophthalmo Reaction in the Diagnosis of Glanders.

Prof. Fröhner, of Berlin, has made a comparative study of the diagnostic value of mallein, used in three different ways—viz. the opthhalmo reaction, the cuti-reaction, and the ordinary method of subcutaneous injection, and records (*Monatsh. für prakt. tierh.*) his results. He concludes that the ophthalmo reaction is superior to the other two methods.

Fröhner's observations were carried out upon twenty-one glandered horses, and in very many cases healthy control animals were also used. The ophthalmic test was carried out as follows. The mallein used was composed of 0·05 gramme of Foth's dog mallein dissolved in 4·5 grammes of a ½ per cent. solution of phenic acid. Two drops of this solution were placed in the right eye of the horse, and at the same time two drops of a simple solution of ½ per cent. phenic acid (without mallein) were placed in the left eye. The same preparation of mallein was used for the cuti-reaction and the subcutaneous test. The former test was carried out by making two incisions (it is not stated how deep these were) in the right side of the neck and rubbing the mallein solution into the inferior incision, while the mallein free solution of ½ per cent. phenic acid was rubbed into the superior one at the same time. The subcutaneous test was carried out in the ordinary way. In most cases two or all three tests were undertaken upon the same horse.

Summarising the results, the cuti-reaction proved very disappointing. Its result was absolutely negative in most cases, though the subjects were proved to be glandered post-mortem. The subcutaneous test gave good results, but the ophthalmo reaction gave even better. Twelve hours (in one case even five hours) after placing the mallein into the right eye, that eye showed a discharge which was usually distinctly purulent; while the left eye, into which the mallein-free phenic acid solution had been instilled, remained unaffected. The ophthalmic test yielded negative results when applied to non-glandered horses, as the subcutaneous injection of mallein does.

As the technique for the ophthalmic test is very simple, Fröhner suggests that in practice it should always be applied at the same time as the subcutaneous mallein test.—(*Annales de Méd. Vét.*)

Abscess of the Liver and Thrombosis of the Posterior Vena Cava in Cattle.

Wyssmann reports (*Schweizer Archiv.*) the case of a nine-year-old cow which died suddenly during the night, and which he examined post-mortem. The cow had given seven litres (about 12¼ pints) of milk the evening before; and the sudden death had aroused a suspicion of anthrax.

The cadaver was lying on the left side, and a considerable quantity of white foam was found near the manger. The vulva had a blueish tint, and the rectum, which was partially everted, was sanguinolent. The jugular veins were considerably distended and very apparent. When incised they gave exit to imperfectly coagulated blood, the microscopical examination of which was negative so far as anthrax was concerned. The abdominal cavity contained several litres of a sero-sanguinolent exudate, The visceral peritoneum, the epiploon, and the rumen were beset with small dark-red proliferations; the rumen contained much alimentary matter, and showed an adhesion at the umbilical region. The intestine revealed no inflammatory lesions; while the spleen, which was a little augmented in volume, was softened and of a red-brown colour. The liver was tripled in volume, was gorged with blood, and showed some reddish yellow spots upon its surface; while its tissue was blackish red. The hepatic lymphatic glands were engorged, and the gall bladder was considerably distended. Several cicatricial depressions were noticed upon the diaphragmatic aspect of the liver; and an abscess, well isolated and containing yellow pus, was found in the hepatic tissue. The tissue of the edges of the liver was indurated, and there two abscesses were noticed. In the superior portion of these abscesses the posterior vena cava had contracted a very firm adhesion with the tissues and was thrombosed, having a thickness of four inches; its lumen was

not, however, completely obliterated. The lungs were tripled in volume, œdematous, dark red in colour, and were traversed by gelatinous streaks of about 4-10 inch in thickness. The bronchi, trachæ, and larynx contained much foamy mucus, and their mucous membranes were very red. The two cardiac ventricles contained dark and imperfectly coagulated blood, and the kidneys were very congested.

Prof. Guillebeau, who examined the pus of the abscesses microscopically found it to contain both coli bacilli and the necrosis bacillus.

The few cases of this affection which are mentioned in the literature of Harmst, Faustle, and Bidard occurred with almost similar manifestations to the above from the symptomatic and anatomopathological points of view. Franck and Reimers, however, have observed that sometimes hepatic abscesses, instead of causing thrombosis of the veins, open into these veins and so produce metastatic abscesses in the lungs and kidneys, or even pyemia.

The diagnosis of this condition during life is almost impossible.

As regards the etiology, it may be held certain that the thrombosis of the vena cava is most frequently the result of an inflammatory process of the adjoining hepatic tissue, which provokes an inflammation of the vascular wall with consecutive coagulation of blood. The consequences of the formation of these thromboses are extremely variable, for, while some have little influence on the general condition of the animal, others entail profound disturbances necessitating slaughter. Sometimes, also, as in the present case, sudden death occurs in animals apparently in good health, causing anthrax to be suspected.

The venous alterations often provoke serous transudations into the peritoneum, or a rapidly mortal pulmonary œdema.—(*Annales de Méd. Vét.*)

W. R. C.

MILK AND DAIRIES BILL.

[ABSTRACT.]

1. A person shall not carry on the trade of dairyman in any dairy within the district of a sanitary authority unless he and the dairy are registered with the sanitary authority in accordance with this Act and the orders made thereunder, and if he does so he shall be guilty of an offence and shall be liable on summary conviction to a fine not exceeding *five pounds*.

2. The medical officer of health for any sanitary district shall have power at all reasonable hours to enter any dairy situate within the district and inspect the dairy and the persons employed therein, and, if accompanied by a veterinary inspector or some other properly qualified veterinary surgeon, to inspect the cattle therein.

(Every dairyman and the persons in his employment shall render such reasonable assistance to the medical officer of health or a veterinary inspector or veterinary surgeon as he may require for all or any of the purposes of this section, and any person refusing such assistance or obstructing such medical officer of health or veterinary inspector or veterinary surgeon in carrying out the provisions of this section shall be liable on summary conviction to a fine not exceeding *five pounds*.)

3. If on any inspection of a dairy the medical officer of health making the inspection is of opinion that infectious disease is caused, or is likely to be caused, by consumption of the milk supplied from the dairy, or of the milk of any particular cow kept therein, he shall report thereon to the authority by whom he was appointed (hereinafter referred to as the responsible authority), and to the Local Government Board and Board of Agriculture and Fisheries, and his report shall be accompanied by any report furnished to him by the veterinary inspector or veterinary surgeon, and the medical officer of health, if he considers the case to be one of urgency on account of the spread or suspected spread of infectious disease, may, on behalf of the responsible authority, and pending their decision, agree with the dairyman that the dairyman shall stop the supply and use of milk from his dairy or from any particular cow kept therein ; or make an interim order prohibiting the supply for human consumption.

4. On the receipt of a report or a copy of a report made by a medical officer of health the responsible authority may serve on the dairyman notice to appear before them within such time, not less than twenty-four hours from the time of the service of the notice on him as may be specified in the notice, to show cause why an order should not be made prohibiting him, either absolutely or unless such conditions as may be prescribed in the order are complied with, from supplying for human consumption, or using, or supplying for use, in the manufacture of products for human consumption, any milk from the dairy or from any particular cow kept therein until the order has been withdrawn in accordance with the provisions of this section. The notice shall be accompanied by a copy of the reports made on the inspection of the dairy.

5. Whenever an inspection is made in consequence of a notice given by the medical officer of health of a notifying authority a copy of any reports which may be made by the medical officer of health making the inspection or by the veterinary surgeon or veterinary inspector accompanying him and information as to whether any action has been taken upon those reports and as to the nature of that action shall be furnished to the medical officer of health who gave the notice.

6. If any dairyman, whilst any interim or other order prohibiting the supply or use of milk made under this Act of which he has notice is in force, supplies or uses any milk in contravention of the order, he shall be liable on summary conviction to a fine not exceeding *five pounds*.

7. An interim or other order prohibiting the supply or use of milk made under this Act shall be forthwith withdrawn and notice of the withdrawal served on the dairyman as soon as may be after the responsible authority or their medical officer of health are satisfied that the milk supply has been changed or that it is not likely to cause infectious disease.

8. If a dairyman is aggrieved by an order prohibiting the supply or use of milk (other than an interim order) he may appeal to a court of summary jurisdiction, who may confirm, vary, or withdraw the order.

9. If any order prohibiting the supply or use of milk is made under this Act either by the medical officer of health or by the responsible authority without due cause, or if the responsible authority or medical officer of health unreasonably refuse to withdraw any such order, the dairyman shall, if not himself in default, be entitled to recover from the responsible authority full compensation for any damage or loss which he has sustained.

10. Where a responsible authority have delegated their powers under the provisions of this Act with respect to the inspection of dairies and the making of orders prohibiting the supply or use of milk to a committee, anything authorised or required by those provisions to be done to or by the authority shall be done to or by the committee.

11. The council of any county, and the medical officer of health of any county, may exercise and perform in a rural district, and if the council of an urban district consents in an urban district, any of the powers and duties to be exercised and performed under this Act by a sanitary authority and by the medical officer of health for a sanitary district respectively, in connection with the inspection of dairies, and the things required or authorised to be done on or after the inspection of a dairy.

12. If a person—

(*a*) Knowingly sells, or offers or exposes for sale, or suffers to be sold or offered or exposed for sale, for human consumption or for use in the manufacture of products for human consumption ; or

(*b*) Knowingly uses or suffers to be used in the manufacture of products for human consumption ;

the milk of any cow which has within six months to his knowledge given tuberculous milk, or which is suffering from tuberculosis of the udder, or which is emaciated from tuberculosis, he shall for each offence be liable on summary conviction to a fine not exceeding *ten pounds*.

13. It shall be lawful for an inspector of the Local Government Board, or the medical officer of health of a county or of any sanitary district, or any person provided with and, if required, exhibiting any authority in writing from such an inspector or medical officer of health, to take for examination samples of milk at any time before it is delivered to the consumer.

14. The Local Government Board may by order require the council of any county, borough, or urban district to appoint, or combine with another such council in appointing, for the purposes of this Act, one or more veterinary inspectors, or to employ for those purposes any inspector or other officer appointed by the council under the Diseases of Animals Act, 1894 : and any such order requiring a combination of councils may provide for all matters incidental to such combination, and in particular how the expenses incurred are to be apportioned.

15. The Local Government Board, after consultation with the Board of Agriculture and Fisheries, may make such general or special orders as they think fit for the purpose of carrying this Act into effect.

16. A warranty or invoice shall not be available as a defence to any proceedings under the Sale of Food and Drugs Acts, 1875 to 1907, where the article in respect of which the proceedings are taken is milk.

17. The Local Government Board shall make regulations under the Public Health (Regulations as to Food) Act, 1907, for the prevention of danger arising to public health from the importation of milk intended for sale for human consumption.

18. The sanitary authority of any district (other than a rural district with a population of fifty thousand or upwards may, subject to regulations under this section, establish and thereafter maintain depots for the sale of milk specially prepared for consumption by infants under two years of age.

19. Where a complaint is made to the council of a county in which a county district is situate—

(*a*) by any four inhabitant householders of the county district ; or

(*b*) by the parish council or parish meeting of any parish within the district ; or

(*c*) by the sanitary authority of a district within which milk is supplied from any dairy in the county district ;

that the council of the county district have failed to fulfil their duties under this Act, the county council may cause a public local inquiry to be held, and if after holding such an inquiry the county council are satisfied that there has been such a failure on the part of the council of the county district, the county council may resolve that the powers of the council of the county district under this Act be transferred to the county council, and those powers shall be transferred accordingly, and section sixty-three of the Local Government Act, 1894, shall apply as if the powers had been transferred under that Act.

If the council of a county or county borough fail to fulfil any of their duties under this Act, whether imposed on the council by this Act or in the case of a county council transferred to the council from the council of a county district under this section, the Local Government Board may after holding a local inquiry make such order as they think necessary or proper for the purpose of compelling the council to fulfil their duties, and any such order may be enforced by mandamus.

20. The Local Government Board may hold local inquiries for the purposes of this Act, and any expenses incurred by the Board in respect of such inquiries, including the salary of any inspector or officer of the Board engaged in the inquiry, not exceeding *three guineas a day*, shall be paid by such authorities and persons, and out of such funds and rates as the Board may by order direct.

21. Any notice, order, or other document required or authorised to be served under this Act may be served by delivering the same or a true copy thereof either to or at the usual or last known residence of the person to whom it is addressed, or where addressed to the owner or occupier of premises, then to some person on the premises.

22. The expenses of local authorities under this Act shall be defrayed :—

(*a*) in the case of a county council out of the county fund ;

(*b*) in the case of the common council, out of the general rate ;

(*c*) in the case of the council of a Metropolitan borough, as part of the expenses incurred by the council in the execution of the Public Health (London) Act, 1891.

(*d*) in the case of the council of a municipal borough or urban or rural district, as part of their general expenses incurred in the execution of the Public Health Acts.

23. Proceedings against a dairyman for failure to comply with an order made by a responsible authority or a medical officer of health requiring the dairyman not to supply milk from a dairy or from any cow in a dairy may be taken before the court of summary jurisdiction either in the place where the offence was committed or in the place where the dairy is situated, and shall be taken only by the authority by whom or on whose behalf the order was made.

24. In this Act—

The expression "dairy" includes any farm, farmhouse, cowshed, milk store, milk shop, or other place from which milk is supplied or in which for purposes of sale or manufacture into butter or cheese milk is kept or used, but does not include a shop from which milk is not supplied otherwise than in the closed receptacles in which it was delivered to the shop or a shop in which milk is sold for consumption on the premises only.

The expression "dairyman" includes any cowkeeper, purveyor of milk, or occupier of a dairy, but shall not include a person who only sells milk of his own cows in small quantities to his workmen or neighbours for their accommodation.

The expression "medical officer of health" includes any duly qualified medical practitioner authorised by the council to act on behalf of the medical officer of health.

The expression "veterinary inspector" means an inspector being a member of the Royal College of Veterinary Surgeons, or any veterinary practitioner qualified as approved by the Board of Agriculture and Fisheries.

The expression "milk" includes cream.

THE TRANSVAAL VETERINARY MEDICAL ASSOCIATION.

BLOED PENS IN LAMBS.*

ALSO KNOWN AS "INFECTIOUS DIARRHŒA IN LAMBS," DYSENTERY, SLAPZIEKTE, SKITTERY, VERSTOPZIEKTE.

By Mr. W. H. ANDREWS, M.R.C.V.S.

This is by no means a new disease, for in an article in *The Cape Agricultural Journal* for Sept., 1904, Hutcheon quotes a communication on the subject from a certain "Old Hendrick" to *The Colesberg Advertiser* in October, 1888. Moreover, a number of Boers have assured me that a disease called Bloed Pens occurred on their fathers' farms at least 40 or 50 years ago. As the mortality was so much lower in those days, however, many are of the opinion that the "old Bloed Pens" was quite a different disease—a more or less benign condition of indigestion due to simple causes, such as overfeeding.

A disease in lambs closely resembling Bloed Pens, if not identical with it, is recorded by Nocard and Leclainche, by Moussu, and by Cagny as occurring in France, and as causing very serious losses on certain farms, and in certain districts. It is also mentioned by Hutyra and Marek.

This disease appears to have existed for many years on a number of farms in the Steynsburg district, and on the same farm the incidence, or at least the mortality, varies within very wide limits in different seasons. Farms are also affected to a greatly varying degree, some farms having a very bad reputation in this respect, while others have suffered annually, for several years, a small but varying loss. A farm free of the disease may often be surrounded by infected farms, and this state may exist for years.

There appears to be no doubt that within recent years the disease has appeared on many farms, and in several districts, previously considered to be quite free from it. The disease has been reported to me from the following districts of the Cape Province: Phillipstown, De Aar, Hanover, Colesberg, Middleburg, Steynsburg Maraisburg, Venterstad, Burgersdorp, Barkly East, Queenstown, Cathcart, Tarka, and Uitenhage. It is also recorded from the Fauresmith district of the Orange Free State, and probably exists in other districts also.

The percentage of lambs dying from the disease recognised as Bloed Pens may be as low as 1% on certain farms or in certain seasons, and, on the other hand, a farmer may lose from 20 to 60% or even more, of the lambs born in one season. There can therefore be no doubt that this disease is a serious menace to the sheep-breeding industry, on which the future prosperity of a considerable part of the country depends.

The term Bloed Pens is applied by farmers to a disease attacking lambs during the first two, or even three, weeks of extra uterine life, and it is at present difficult to separate all cases of true Bloed Pens from other and accidental conditions.

The age at which the disease is first seen, the duration of the sickness, and the symptoms all vary considerably. In the majority of cases the lamb exhibits the first symptoms on the second or third day after birth, but they may not appear until even the second week. The majority of farmers are agreed that a certain proportion of the lambs attacked are visibly sick at the time of birth, or very shortly afterwards.

The occurrence of abortion or premature birth is not commonly associated with Bloed Pens, and very few lambs appears to be stillborn.

The course of the disease is generally acute, and lambs usually die within 24 to 36 hours of the time when symptoms are first noticed.

In a considerable number of cases lambs which have never been noticed to be sick are found dead, and in some instances the period of visible sickness could not have exceeded one or two hours. On the other hand animals may sometimes linger for a week or more after the first symptoms are shown, and such cases are said sometimes to end in recovery.

The symptoms vary in different cases, but the principal symptoms are the following:

1. Refusal or inability to drink from the ewe.
2. Continual bleating, and wandering from the ewe.
3. Diarrhœa In a small proportion of cases, blood is passed with the fæces.
4. Obstinate constipation may occur, especially in sub-acute cases.
5. Abdominal distension is usually considered to be a symptom, but in some cases the lamb presents a decidedly "tucked up" appearance.

Later symptoms are general weakness, a tendency to lie down, inability to follow the ewe, or ultimately to recognise her, and finally collapse, and death.

The diversity of the symptoms displayed has led many farmers to recognise several types of the disease, sometimes even considered as quite distinct diseases. Hence arise such names as "dik" and "dun" Bloed Pens, Slapziekte, Verstopziekte, etc.

Post-mortem lesions. Except in cases which have lived exceptionally long, there is no appreciable emaciation. As a rule, externally there are signs of diarrhœa, possibly with admixture of blood, and abdominal distension may be noted.

In the great majority of cases, if not in all, the umbilicus externally is quite normal in appearance.

Coagulation of the blood, rigor mortis, and post-mortem putrefaction appear to occur normally.

The lungs, trachea, and bronchi are generally normal; in a few cases there may be slight pulmonary œdema and congestion. The bronchial glands are generally normal, but occasionally are somewhat enlarged and congested.

The great serous cavities sometimes contain a transudate usually clear, but occasionally blood-tinged. The pericardial and pleural membranes do not show any abnormalities, but the peritoneum generally shows congestion of vessels in parts, occasionally to a marked degree. The peritoneal coat of parts of the intestine, and occasionally that of the pyloric portion of the abomasum, may be deep red in colour, and in some cases that of the greater part of the small intestine is deep yellow in colour. Localised areas of peritonitis may occur in sub-acute cases, as described later.

The heart is generally normal, but in acute cases petechiæ may occur under the epicardium and endocardium.

The liver and spleen present no characteristic changes visible to the naked eye.

The suprarenal glands appear in some cases to be much congested, and even to contain hæmorrhages, and the medulla of the kidney is often very dark red in colour.

The omasum, rumen, and reticulum are normal. The abomasum may be normal, or the mucosa may show varying degrees of congestion, usually in small patches. The contents are usually normally coagulated milk, the coagula as a rule being comparatively small and soft.

After making a very large number of careful autopsies I am of opinion that the marked lesions in the aboma-

* Read at the eighth annual meeting, held in Pretoria, on 1st, 2nd, 3rd August, 1912.

sum observed in cases of White Scour, and described by Hutcheon as occurring in Bloed Pens, are exceptional in the latter disease.

In the small intestine the extent and degree of the inflammatory changes in the mucosa vary considerably. In some cases such lesions are seen throughout the whole length of the intestine, in other cases affected portions of greater or smaller extent occur, at irregular intervals, while the intervening portions show little if any change. In some cases the anterior portion of the intestine is more or less normal, and only the second part is affected; in other instances the reverse is the case.

In different cases, and even in different portions of the intestine in the same case, the lesions vary from a moderate hyperæmia over small patches or more diffuse to a marked congestion with thickening of the mucosa, and sometimes surface erosion. Occasionally petechiæ are seen, and in rare cases areas where actual hæmorrhage into the intestinal lumen has occurred.

In some sub-acute cases the mucosa generally is more or less normal, but shows at intervals a small lesion which appears generally, if not always, to develop in connection with a Peyer's patch. The mucosa becomes much congested and thickened, ulceration commences, and this is accompanied by active proliferation of the surrounding connective tissue. One may thus find small fibrous patches, easily detected by both eye and fingers, about ½-2 cms. in diameter. The ulcer has usually a yellowish-green hard crust, beneath which the ulcerated membrane is of a deep red colour. If death does not intervene the process eventually involves the peritoneum, and adhesions are formed between affected portions of the intestine and the abdominal wall, or any adjacent organ. The fibrous thickening occurring around these lesions may reduce the lumen of the bowel very considerably, and in some cases it is almost completely obstructed.

The *large intestine* is less constantly affected; but when lesions occur they are of the same nature, and show the same degrees and types as in the small intestine.

The *mesenteric glands* are frequently but not always enlarged and hyperæmia, they may even appear hæmorrhagic.

The umbilical vein is almost invariably quite normal in appearance. The umbilical arteries may appear normal, but sometimes appear to be rather distended, and there may be considerable extravasation of blood along their course, extending over the urachus and on to adjacent parts of the bladder wall.

Diagnosis.

It will be realised, from the description given, that some cases of Bloed Pens are quite characteristic, and in these cases a reliable diagnosis may be made. In a considerable proportion of cases, however, neither the ante-mortem symptoms, nor the post-mortem lesions, present any very characteristic feature. It is often quite impossible, therefore, to determine with certainty whether an individual case is one of Bloed Pens or not, although the history of the flock from which the case is taken may give useful indications. The difficulties of diagnosis, and the probability of having practically all deaths in lambs referred to this one disase render it very difficult to form accurate opinions about any features of the disease, and the first object of any investigations into the cause and nature of Bloed Pens must be to find a basis on which to establish a means of accurate diagnosis.

Conditions affecting the occurrence of the disease.—From the answers to the queries sent out by this division in book form, and from personal observations, it would appear that variations in topographical features, soil, veldt, and water supply, have no influence on the disease.

Species.—A few farmers claim to have seen the same disease occur in calves and foals, but the majority are not of that opinion. It is commonly held, however, that kids are affected similarly to lambs.

Breeds of sheep.—All breeds seem to be more or less equally liable.

Age.—This, as previously stated, varies up to 2 weeks.

Sex.—No difference.

The condition of the Ewes is generally quite normal. Hutcheon's theory that the lambs might be predisposed to the disease through the influence of debilitating conditions on the ewes is, in my opinion, quite untenable. As I have seen personally, the disease may work havoc in a flock where the ewes are well fed, protected from any inclement weather, and in excellent condition.

Season of the year.—From a mass of often strangely contradictory evidence it would appear that this has no influence, but many farmers are very confident as to the safety of lambing in certain months, and especially the warmer months of the year.

Weather.—Perhaps the majority of farmers have suffered more heavily in wet seasions, but many have had the opposite experience.

Ætiology.

From the description of the disease it will be seen that it is very similar to White Scour in calves, but, as previously stated, the abomasum is not commonly affected to any great degree, and lung complications are, I think, unknown. But in any case I do not think we would be justified in assuming that the two diseases are identical, and that the umbilicus is the sole channel of infection.

I may remark that a large number of progressive farmers have taken great trouble in disinfecting the navels of newly-born lambs, and I think that they are unanimous in stating that their losses were not affected thereby to any appreciable extent. Although this cannot be taken to disprove the navel theory, yet it certainly appears that this disease demands separate investigation.

Many theories have been formulated, but I think that the only feasible hypotheses are the following:—

1. That the disease is caused by a micro-organism gaining entrance by the mouth, or by the umbilicus, during or after birth, or even in utero.

2. That it is due to a toxin gaining access to the lamb via the mother's blood in utero or by way of the milk after birth. This toxin might be manufactured by some micro-organism or derived from a plant.

A very large number of farmers are quite positive in their assertions that some lambs are actually born sick, and I have seen newly-born lambs presenting lesions quite indistinguishable in the present state of our knowledge from those of Bloed Pens. Moreover, Moussu records the existence of a disease in calves very similar to White Scour, in which the calves are undoubtedly born sick. I think, therefore, that it is unwise to condemn any of these theories untested, and that experiments should be conducted with a full appreciation of all possibilities.

Under the supervision of Dr. Theiler, I drew up a scheme for a series of such experiments, but there has been the greatest difficulty in carrying them out. Bloed Pens, which caused almost ruinous loss over large districts during 1911, has been almost negligible up to the present month of 1912, and I have been seriously hampered by extreme difficulty in finding any cases. The experiments in which animals are exposed to infection in a variety of ways are therefore very incomplete, and we are not yet in a position to draw any definite conclusions.

During the past two weeks a number of inoculations into both ewes and lambs have been performed, but the results are not yet apparent.

With regard to cultures, I have not yet been able definitely to associate any organism with the disease, and I think that the members of the association will fully sympathise when I remark that when making cultures in some kraal or stable it is not difficult to get bacteria of sorts.

In conclusion, I suppose that it is hardly necessary to add that a most extraordinary variety of supposed prophylactic and curative agents have been employed, and that some have obtained a very great, if sadly ephemeral, reputation. Of more rational measures the burning out of kraals and the keeping of ewes on the veldt to lamb appear in many cases to have reduced the incidence of the disease very materially, but there are some notable exceptions.

A Communication on a Bone Disease of Fowls, with Exhibits.

By Mr. T. H. Dale, M.R.C.V.S.

Mr. Dale said that although he had intended to write a paper on the disease of Poultry, for which he was down on the Agenda, he had found that the preparation of his paper on "Sterility" in conjunction with extra pressure of his ordinary duties had made this impossible. As however very little, or practically nothing was known about the disease, there was very little to be said. The two exhibits which he intended handing over to Dr. Theiler for experimental purposes were cockerels, the one about 8 months old and the other about 16 to 18 months. It would be noticed in the case of the former that the shanks or long bones of the legs were many times thicker than normal, and although the bird appeared to be perfectly healthy, and although no other lesions were discernable, it would be found when the bird was slaughtered that the majority of the bones of the skeleton were affected, and that a considerable amount of deformity existed.

In the case of the older bird, although the leg bones were normal, which was unusual, these generally being affected first, it would be found on examination that there was an enormous thickening of the breast bone, and if one looked at the bird it would be noticed that it presented a curiously "humped" or deformed appearance, although apparently in good health, with the exception of a chronic diarrhœa, which always set in sooner or later. In any cases which had died the bird gradually wasted away, there appeared to be a progressive atrophy of the whole muscular system, and as the disease progresses a diagnostic "gait" developes, which is difficult to describe, but which is undoubtedly due to the enormously increased size of the bony skeleton, the curvature of the bones which often takes place, and the muscular wastage. There is, however, no ankylosis, the absence of articular lesions being most marked, and the changes in the bones themselves appear to be suggestive of inflammatory rather than degenerative changes, the bone is softer than usual, and the line of demarcation between the compact and cancellated tissue is ill-defined, whilst the bones themselves are chalky in appearance.

Should it be thought necessary to coin a name at this stage, "Osteitis Deformans" of Poultry might do. The disease makes its appearance in certain yards annually, a small percentage only being infected—perhaps two or three per cent.—but it does not appear to have any hereditary tendencies, as the chicks from eggs hatched out in other yards do not become infected. No line of treatment has been of the least avail, the disease although progressing slowly is never arrested; the lesions become steadily more marked, the bird becomes a hopeless deformity, diarrhœa sets in, followed by cachexia and death.

THE SYMPTOMATOLOGY AND PATHOLOGY OF SNAKE-BITE IN DOMESTICATED ANIMALS.

By W. H. Andrews, B.Sc., M.R.C.V.S.

In introducing the subject of snake-bite, I would point out that this paper is intended to emphasise chiefly the features of clinical interest, and that as regards pathology I have limited myself to the enumeration of the lesions visible to the naked eye. The subject, apart from its theoretical interest, is one of direct practical importance to every veterinary surgeon working in a sub-tropical country such as South Africa.

The South African veterinary surgeon hears of many deaths among domesticated animals which are alleged to be due to snake-bite, and he will probably see various animals presumed to be dying, or to have died, from that cause. In the majority of cases, however, the cause of such an animal's condition is a matter of surmise, the actual bite not having been witnessed; moreover, the identity of the snake concerned is not established.

The symptoms and lesions produced in man by the bite of various snakes have been fully described by a number of observers in India, Australia, America, etc., but our knowledge of the corresponding processes occurring in the domesticated animals is of a very general and somewhat vague character, being based chiefly on the known facts concerning man and small laboratory animals. It was chiefly with the object of establishing definite data, on which to base, as far as possible, a reliable diagnosis, that, at Dr. Theiler's suggestion, I undertook the study of this subject.

A certain knowledge of the classification of snakes is a useful asset to the veterinary surgeon in either his professional or his private capacity. Harmless snakes, which may render excellent service as expert destroyers of rats and mice, are frequently the innocent cause of much unnecessary excitement, and even terror. On the other hand, certain venomous snakes may easily be mistaken for harmless species; thus the yellow (or Cape) cobra bears a strong, though superficial resemblance to the harmless mole snake, and the night adder and the egg-eating snake are very frequently confused. I propose, therefore, to give a short *resumé* of the classification most generally accepted.

The order *Ophidia* is divided into five families, of which only two, the *Colubridae* and *Viperidae*, are of special interest to the pathologist.

Colubridæ. The members of this family are arranged according to certain notable differences in their identity, in three divisions, viz. the aglypha, opisthoglypha, and proteroglypha.

Aglyphous colubridae. In these the upper jaw bears a considerable number of teeth arranged in two series, maxillary and palatine: these teeth are all solid, and members of this division are quite harmless.

Proteroglyphous colubridae. The palatine teeth are more or less similar to those of the aglypha, although generally fewer in number; the maxillary teeth, on the other hand, show a striking difference.

The series of more or less small maxillary teeth, shown in the aglypha, is here usually represented on each side by a single large tooth or fang, situated at the front of the maxilla, and immediately behind this fang a number of accessory or replacing fangs in different stages of development. The large fang is more or less deeply grooved, and the base of the groove is in communication with a duct leading from a highly specialised poison gland. These snakes are all venomous.

Opisthoglyphous colubridae are morphologically intermediate between the aglypha and proteroglypha. In these the maxillary teeth may be reduced in number, but there are always some solid teeth, similar to those found in the aglypha.

Towards the posterior extremity of the maxilla, however, are a small number of somewhat larger teeth possessing a distinct groove. This groove does not communicate with a large specialised gland and duct, but there is a small glandular structure situated at the base of the grooved teeth. The opisthoglypha have generally been considered as non-venomous, or as being unable to inflict a bite dangerous to man or the larger mammals, but we have been able to disprove this theory as far as one member at least (the Boomslang) is concerned.

Viperidæ. Finally, these are very similar in dentition to the proteroglyphous colubridæ, possessing a very large maxillary fang, pierced by a more or less completely closed channel. They are distinguished by certain modifications in the maxillæ and adjacent bones, permitting a free movement of rotation of the anterior extremity of the upper jaw. The head is generally triangular, the body flattened, and the tail very short; the fangs are very long, and the point of the fang is very sharp. They are all more or less venomous.

The formation of the so called "hood," by the raising of the anterior series of ribs, is characteristic of the genera Naja and Sepedon, and a snake showing a "hood," when the head is well raised, is either a cobra or a ringhals.

It may be remarked that colour is a very unreliable guide in classification, for many species show considerable variation in this respect, and in some species (*e.g.*, the Cape cobra) the differences may be quite remarkable.

The venomous power of one and the same snake is not constant, but varies greatly with the amount of venom accumulated and ready for use, and a bite may be more or less harmless if inflicted immediately after the snake has consumed a meal, or after it has bitten some object such as another animal, or a stick.

In two of our experiments (concerning a boomslang and a ringhals respectively), the snake bit two sheep in rapid succession; in each case the animal first bitten died, and the sheep bitten later was hardly, if at all, affected.

On the other hand, it is said that a snake may sometimes inflict several fatal bites in quick succession.

The toxicity of the venom of a given species appears to vary in different localities, and in certain seasons.

Methods of Investigation.

With regard to the methods employed, it was decided to allow the snake which was being tested actually to bite the experimental animals, and this method was chosen as reproducing, as far as possible, natural conditions with regard to the dose of the venom employed, and the method of its introduction into the animal tissues.

For manipulating large snakes, we generally employ a pole of about six feet in length, pierced near one end by two holes, about one inch apart. A stout cord, knotted at one end, is passed through the two holes, and the snake is held, a few inches behind the head, in the loop thus formed.

The further end of the pole, together with the loose unknotted end of the cord, may be held with one hand, and with the other hand it is advisable to secure the tail of the snake.

Smaller snakes, such as Schaapstekers, are more easily held with forceps, or with the hand, but mechanical means are generally to be preferred for our purpose, as it is then possible to allow the snake greater freedom to strike.

The snake, secured by one of the above-described methods, was brought into contact with a selected region of the experimental subject, and allowed to bite freely; in some cases it was necessary to irritate the snake before any attempt to bite was made. The bitten animal was then placed in a loose box, and freed, as far as possible, from all restraint, the clinical symptoms being noted at short intervals.

South African Snakes.

The South African sub-continent contains a very considerable number of different genera and species of snakes, the majority being quite harmless to man and the larger animals.

Of the families that are of special interest from our point of view, on account of their venomous powers, the following are the commonest and most widely distributed species:—

Colubridae—
Proteroglypha. The Mamba (Dendraspis)
The Cape black-necked and Egyptian cobras (Naja)
Ringhals (Sepedon).
Opisthoglypha, Boomslang (Dispholidus typus)
Schaapsteker (Trimerorhinus)
Sand snake (Psammophis)
Herald snake (Leptodira).
Viperidae. Puff adder (Bitis arietans)
Night adder (Causus rhombeatus).

Unfortunately I have not yet been able to make any observations on the effect of the bite of the mamba, owing to the difficulty of procuring live specimens of this species.

I have also been unable to carry out any experiments with the black-necked cobra, but the other species enumerated above have been tested on horses, mules, donkeys, sheep, and dogs.

Clinical Symptoms.

It is advisable to consider first only the ordinary poisonous snakes, the proteroglyphous or front-fanged colubrines, and the vipers.

Calmette, in his classical work on venoms, gives a description of the clinical symptoms of snake-bite in man and in laboratory animals, and he makes the following statement:—

"It is remarkable to notice how great is the importance of the local disorders when the venomous reptile belongs to the group of the Solenoglyphs (or vipers), while they are practically nil with the Proteroglyphs (colubridæ and sea-snakes)." He then gives two clinical pictures, the first being that of a man bitten by a cobra, and the second that of one bitten by such a viper as a Lachesis.

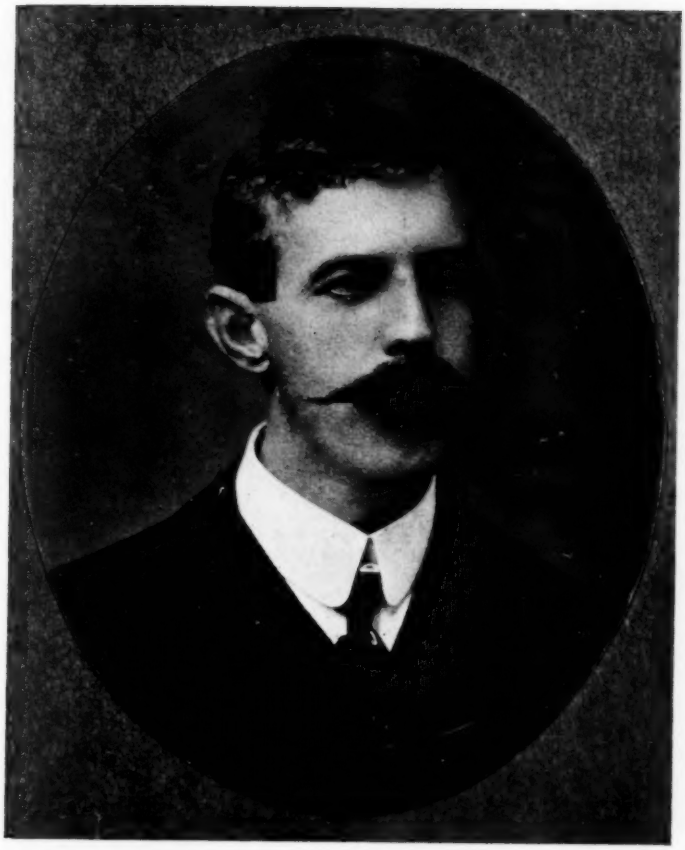
In the first case (of cobra bite) the symptoms given are those of nervous depression, coma, and the termination by respiratory paralysis; in the second case (viper bite) marked pain locally, extensive local hæmorrhagic infiltration, and finally depression, coma, respiratory paralysis, and death from asphyxia.

A striking feature of the clinical records of our cases relating to more than fifty animals (horses, mules, donkeys, sheep and dogs) is the considerable variation to be observed with regard to practically every symptom. These variations are doubtless due to differences in the susceptibility of the subject of the bite, and in the dose of venom injected.

The symptoms which at first sight appear to be so variable may be correlated and arranged in several main groups.

Local swelling.—In some cases this is present, with the possible occurrence of subcutaneous or sub-epidermal hæmorrhage.

With regard to the local swelling, we cannot accept Calmette's statement that such local changes are practically absent in cases of a bite by a colubrine snake. Very large prominent œdematous swellings have appeared in a number of our cases, following bites inflicted by the Egyptian and Cape cobras, and by the Ringhals. On the other hand, it must be admitted freely that there is a much more pronounced tendency to local changes under the influence of the venom of an adder or



SIR STEWART STOCKMAN. M.R.C.V.S.

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viper, and that such local changes are of a more serious and painful character.

When death ensues rapidly, animals bitten by vipers may show little or no local swelling, and it appears from our experiments that with colubrine venom the local swelling is usually but not always a sign of a subacute case which may probably end in recovery.

It should be noted that the œdematous swellings show a great tendency to gravitation, and that such a swelling, when first seen, may be situated at some considerable distance from the bite.

Hæmorrhagic discoloration of the skin is generally difficult clearly to distinguish in domesticated animals, but in favourable situations it may sometimes be seen, especially as a result of the bite of a viper.

Symptoms directly due to the position of the bite.—These symptoms are naturally of a varied character. In the majority of our experiments the bite was inflicted on the neck, shoulder, or thigh of the experimental subject.

In cases where the neck is primarily affected there are usually no symptoms of this character, unless an extensive œdema follows, involving the forelimb by gravitation and producing lameness.

A bite on a limb may produce lameness from pain, or from mechanical interference with the movement of a joint by swelling, and from either of these causes an animal may go down and remain for a considerable period in a recumbent position, although the general health may be hardly, if at all, affected.

In one case in which a sheep was bitten in the nostril the ordinary symptoms were complicated and obscured by violent movements of the head, due to considerable hæmorrhage into the nasal cavity, and by dyspnœa, occurring early as a result of hæmorrhage and local swelling.

Symptoms due to local pain.—The presence of local pain may be shown by a variety of symptoms. If a limb is affected there may be frequent jerky movements of that particular limb, it may be abducted or partially flexed, the weight being thrown on to the corresponding limb of the other side, or it may be carried. An animal may look frequently towards the region bitten, or it may even attempt to bite it. There are also general symptoms of pain, such as extreme restlessness, blowing, perspiration, and a frequent hard pulse.

Nervous symptoms.—These comprise signs of nervous excitation and depression, and of pain ; with symptoms of pain we have already dealt.

The symptoms of *nervous excitement* include restless wandering around the box, and restless movements of the head, jaws, limbs and tail. Quivering of muscles, or even strong spasmodic contractions may be shown, and in each case the process may be local or more or less general. In the final stage of asphyxia there may be general convulsions. In some cases there are involuntary contractions of the diaphragm and abdominal muscles, producing vomiting, retching, and copious evacuation of the bowels. Large quantities of urine may also be passed, in some cases after the animal appears to have lost consciousness. Defæcation and micturition appear, in some cases, to occur as manifestations of pain. Other symptoms of nervous excitement shown are frequent deep respirations, and a frequent fast pulse.

To what (if to any) extent the unstriated muscle of the abdominal viscera is concerned in these processes is a question demanding special investigation, and such a matter is, in any case, beyond the scope of this paper.

Other symptoms of *nervous depression* range from slight dullness to paresis, either local or more or less general, and finally paralysis. In the dull stage the animal is inclined to remain for long periods in one position, the head hangs, the ears droop, and frequently the eyes are closed. Later, the animal may go down, or it may rest against a wall or manger, and give the appearance of "boring." Co-ordination of movement may become impaired, resulting in a staggering gait, and control over particular parts may be lost to a varying degree. Thus the lips may hang away from the teeth, and be unable to close on any food, the anus may be relaxed, and the animal may be unable to protrude the penis, or to retract it when protruded. Animals in this stage of depression sometimes show marked salivation

Respiration and pulse.—These are affected by pain, and may reflect the general conditions of nervous excitation or depression. The vast majority of fatal cases, if not all, appear to terminate by paralysis of the respiratory apparatus, and the heart may continue to beat for three or four minutes, or even longer, after respiration has ceased.

Temperature.—This would appear to be affected very little. In a few cases we have noted a rise of not more than one degree Fahrenheit, and in the later stages subnormal temperatures have been recorded.

The details of the experiments performed with the different species of snakes are as follows:—

COLUBRIDÆ.—(1) *Naja haie*, the Egyptian cobra. This species was tested on :—Two horses, of which one died and the other was only moderately affected. One donkey, which was bitten on two occasions, and which recovered. Four sheep, of which two died, one recovered, and the fourth, bitten immediately after another sheep by the same snake was hardly affected, and one dog, which died. Thus in eight cases there were four deaths, three recoveries, and one failure to infect.

With regard to the symptoms, no local swelling was observed in any of the cases terminating fatally, but in those ending in recovery it was a prominent feature. In one case the swelling was hot, tense, and painful, but in the other two cases it was more or less soft and insensitive.

Nervous symptoms were very marked, and there was generally a period of excitement followed by marked depression. In some cases there were, however, several alternating phases of excitement and depression, and the first period of excitement was hardly noticeable in two cases.

In the two sheep following the preliminary symptoms of excitation there was a long period during which the animal appeared normal, and the appearance of the depression led very rapidly to death.

In the one dog tested, which died within four hours, no symptoms whatever were shown until about half an hour before death. Symptoms of great nervous excitement then appeared, and coma and death followed rapidly.

In the other cases the first symptoms were shown from ten to thirty minutes after the bite, and in the cases showing a local swelling the latter was first noticeable in eight minutes in one case (that of a donkey) and in one to two hours in the others.

The periods elapsing before death occurred were as follows :—

Horse : 21 hours.
Two sheep : 5 and 15 hours respectively.
Dog ! Less than 4 hours.

(2) *Naja flava*, the Cape or yellow cobra, was tested on one horse, one mule, and two sheep, and death ensued in every case.

The symptoms were very similar to those caused by the Egyptian cobra, but there appears to be a somewhat greater tendency, with the Cape cobra, to the production of a local swelling. Pronounced swellings appeared in both the horse and the mule, although these cases ended fatally, and, in the latter case, rapidly.

As far as one can judge from a limited number of cases, it would appear that Cape cobra venom is more potent, and causes death earlier than that of the Egyptian cobra. In our cases, the horse died in 40 hours, the mule in 5 hours, and both sheep within one hour.

(3). *Sepedon hæmachates, the Ringhals.*—Ringhals were allowed to bite two horses, two sheep and one dog. The symptoms ensuing were very similar in character to those produced by the venom of either of the two cobras previously mentioned, to which the Ringhals is closely related, but it appears that the Ringhals venom is considerably less powerful, at least as far as its effect on the horse is concerned.

The two horses bitten showed only slight general symptoms of restlessness followed by depression, but in each case there was a very pronounced local swelling, soft and insensitive.

The two sheep showed well marked nervous symptoms, as in case of cobra bite, and died within one and a half and three hours, respectively.

The dog showed preliminary restlessness, commencing half an hour after the bite, and very soon there was marked dyspnoea; very shortly afterwards convulsions commenced, and death occurred forty-five minutes after the bite. It is of interest to note that this dog, a large mongrel Irish terrier, was bitten by a ringhals aged one month, and not quite six inches in length.

The power of the ringhals to project venom for considerable distances is well known; the venom is usually sprayed over the eyes of the victim, producing temporary blindness, and occasionally a conjunctivitis leading to more or less permanent impairment of vision.

I might here remark that the venom of Colubrine snakes generally is harmless when taken by the mouth, and that this appears to apply to that of the ringhals.

VIPERIDÆ—(1) *Bitis arietans, the Puff-Adder.*—This, probably the commonest venomous snake of South Africa generally, was tested on one horse, one mule, one donkey, three sheep and one dog; of these only the mule recovered. Local swelling was absent in two cases, those of a sheep and a dog, both of which died within an hour of the bite. In all the other cases, however, there was a swelling which attained truly enormous dimensions, and it was hot, tense and painful.

The general symptoms were those of great pain, followed by general depression, until finally coma came on, and respiratory movement ceased. In a few instances there was some motor excitement, occurring for short periods.

From the time of the bite to that of death, the periods were as follows:—

Horse: 37 hours.
Donkey: 4 hours.
Sheep: 50 minutes, 80 minutes and 9 days respectively.
Dog: 58 minutes.

The recovered mule was on five subsequent occasions subjected to the bite of one or several puff-adders, and the result was most interesting. Although the first reaction appeared to have conferred a more or less complete immunity, as regards the general effects of the venom, there seemed to be absolutely no increased resistance to the local action. Extensive painful swelling followed on each occasion, and on two occasions there was extensive necrosis and sloughing.

(2). *Causus rhombeatus, the Night Adder.*—This snake, which enjoys a considerable popular reputation for extremely venomous powers, appears to have gained much undeserved blame. In our experiments, one horse, two sheep and one dog received a full and complete bite, but of these animals only one sheep died.

The horse showed only a small œdematous swelling, and even this disappeared rapidly.

In the two sheep and the dog, a very large, hot and tense swelling developed, and there were signs of considerable local pain.

The dog shewed some depression, which soon passed off; but in one sheep there were alternate phases of restlessness (due to pain) and depression, until death occurred, three and half days after the bite.

In practice, a night adder would probably lead to the death from starvation of the majority of sheep bitten, as the extremely large swelling, and considerable pain, would prevent feeding.

Lesions.

The following is a brief description of the lesions usually to be observed at the post-mortem examination:—

(1). *Colubridae.*—If a local swelling was present during life, at that point one finds more or less extensive œdematous infiltration of the subcutaneous areolar fascia. As a rule there is a quantity of clear serous liquid, and yellow gelatinous coagula may also be noted. Exceptionally, there may be hæmorrhagic infiltration, with deep hæmoglobin staining of the adjacent tissues.

The subjacent muscle and deep fascia are generally not involved. The pleural and pericardial cavities in a few cases contain blood-stained transudates. The lungs, trachea and bronchial glands are usually unaltered.

The myocardium, liver, and kidneys generally show naked-eye evidence of varying degrees of the degenerative changes usually associated with the presence of a toxin in the blood stream. The spleen may show softening of the pulp, which is rather darker in colour than the normal.

The alimentary canal is usually normal in appearance throughout, and no naked-eye lesions are noticeable in the ventral nervous system. In some rapidly fatal cases of cobra bite, there are practically no naked-eye lesions whatever.

(2) *Viperidae.* Here, as a rule, the local lesion appears as a marked hæmorrhagic infiltration of the subcutaneous connective tissue, and the subjacent muscles are generally involved to a greater or lesser extent. There may also be hæmorrhage into the dermis itself.

The great serous cavities frequently contain much blood-stained liquid, and petechiæ may be found in the cardiac ventricles and auricles, and under the epicardium, and the pleural and peritoneal coats of the different viscera. Small hæmorrhages may be noticeable in a section of the spleen, and the appearances of parenchymatous degeneration may be shown by the liver, kidneys, and myocardium.

In the preceding descriptions of symptoms and lesions I have referred throughout to the ordinary front-fanged colubrines and vipers, well-known to be venomous.

The *Opisthoglypha*, or back-fanged colubines, can better be treated separately. These snakes have been considered by most, if not all, authorities to be venomous only to a slight degree, and to be unable to harm man or any of the larger mammals. In consequence of the assertion by Mr. F. W. Fitz Simons, Director of the Port Elizabeth Museum, that a Boomslang in his museum had caused what was nearly a human fatality, we tested this species on a baboon, two horses, a mule, and five sheep.

Of these animals, one horse and one sheep were bitten by a snake which was exceptionally aggressive, and which had broken off the fangs on one side by biting fiercely on a stick. These two animals failed to develop symptoms, and the same result occurred with one sheep bitten by a snake that had, immediately before this, inflicted what proved to be a fatal bite of another sheep.

The remaining horse, mule, baboon, and three sheep all died, but the symptoms were very different from those already described. As a rule, little or no local swelling followed, and there was no local pain. After a long incubation period, the animals showed some restlessness, but later the symptoms were those of increasing exhaustion. The mucous membranes became very pale, and in some cases blood exuded from the mouth or nostrils. In other cases blood in large quantities was passed with the fæces, but in some animals the pallor

of the visible mucous membranes was the only sign of the internal hæmorrhage which was occurring. Eventually death occurred from exhaustion.

The mule showed great excitement during the last three hours of life, but in no other case were such nervous symptoms seen.

The period elapsing before any symptoms were noticeable varied from four and a half to 18 hours, except in the one exceptional case of the mule mentioned above, in which the period was 56 hours.

The times elapsing between the bite and death were

Horse: 60 hours.
Mule: 75 hours.
Baboon: 24 hours.
Sheep: 8, 22, and 26 hours, in the three cases.

Post-mortem, the appearance was very characteristic, the prominent feature being the occurrence of extensive hæmorrhages. These hæmorrhages were apparently due to extensive alteration in the walls of the capillary or other small vessels, and only in one case did we find any rupture of a large vessel or of a vascular organ (a subscapular rupture of the liver).

The position of the hæmorrhages varied. In some cases they were chiefly subcutaneous, and removal of the skin revealed a number of patches of hæmorrhagic infiltration, varying in size, and occurring on any part of the trunk, head, neck, or limbs, quite remote from the area of the bite. These patches were usually more or less circular or oval in shape, with comparatively sharply-defined limits

In other cases hæmorrhage occured chiefly in the alimentary canal, either generally or localised in the stomach or one part of the intestine, and especially in the cæcum and colon.

The mucous membrane of the part affected showed petechiæ, or extensive hæmorrhagic streaks and patches, and there was usually an extensive admixture of blood with the ingesta. The heart often showed extensive hæmorrhage under the epicardium and endocardium, and in the substance of the myocardium small hæmorrhages could sometimes be discerned.

The liver was sometimes studded with hæmorrhagic areas varying in size and shape, and the spleen was similarly affected. The kidneys in some cases showed many small hæmorrhages, especially numerous in the cortex. The organs not directly affected by hæmorrhage were naturally very pale, and there appeared to be some degeneration of the hepatic parenchyma.

No lesions of the central nervous system were noted, but the motor excitation observed in one case may possibly have been due to the occurrence of a capillary hæmorrhage near the motor centres.

In conclusion, it may be stated that, although we may recognise certain groups of symptoms as being associated with the action of colubrine and viperine venom respectively, yet cases occur in which it is almost impossible to differentiate between the two, and some cases of snake bite would very easily and naturally be confused with other conditions. Thus one of our horses, bitten by an Egyptian cobra, developed no visible local swelling, and at one period exhibited a clinical picture which would be considered as typical of cases of "staggers," or of cases of the so-called psammoma occurring in the lateral ventricles of the cerebrum. In the stage of motor excitement the symptoms might also, in some cases, suggest a diagnosis of spasmodic colic.

When an autopsy is performed the majority of cases should offer no very great difficulty, especially in cases of a bite from a viper, but some cases of cobra bite are extremely difficult to recognise post-mortem.

The opisthoglyphous boomslang stands more or less alone, in this country at least, and if the symptoms during life are not very characteristic until the later stages the post-mortem lesions are absolutely so.

In the course of the discussions which followed the papers, Mr. Dale said, in reference to "The Common Ailments of the Horse," that one cause of colic which Mr. Kellett had missed, a case of which had recently come under the speaker's notice was scirrhous cord, which extended into the ingunial canal, in fact he was unable to determine the extent of it. The animal exhibited marked colicky pains every second or third day, and for some time the cause was not suspected, when he felt that a very heroic operation was necessary but did not feel too eager about undertaking it. The tumour was therefore punctured with a trocar and canula in two places, one as high up as could be reached, and injected with an aquæous solution of iodine, the tumour gradually became less, the animal made an uninterrupted recovery, and at the present time, after several months' lapse of time, the animal is quite sound, only a thin hard fibrous structure remaining, no thicker than a forefinger of one's hand. He did not put this forward as a substitute for the knife, believing that in the early stages operation and excision of the tumour was indicated, but he did think that this method might be tried in cases which were non-operable.

With regard to Trypan Blue, although he had found it to be an absolute specific in cases of redwater and biliary fever of the dog—provided it could be injected at the onset of the disease, he had found that in the case of biliary fever in the horse it was quite useless, and he thought that some other drug, which Mr. Kellett might have used as an adjuvant might have been the saving clause.

Mr. Dale detailed a successful case of tetanus which he had treated with anti-tetanin and subcutaneous injections of Mag. sulph., but as there was never very marked trismus it was possible that the case might have recovered without, as he had used anti-tetanin after the symptoms had become established and several cases, in fact all except the one instanced had terminated fatally.

Bloed Pens.

In his district it was quite common to find a whole span of oxen passing blood, generally in clots along with the fæces, but it did not appear to inconvenience them in any way, and usually stopped within a few days. If it did not a drachm of carbolic acid was given in a pint of raw linseed oil.

Successful Appeal on a Charge of Cruelty.

At Denbighshire Quarter Sessions held at Ruthin on Saturday, the 4th inst., before Mr. Jelf Petit (Chairman) and other magistrates, an appeal by Tom James Owens, of the the Great Western Railway Company, Chirk, was heard against a certain conviction made against him by the Justices for the Petty Sessional Division of Llangollen on the 7th October, 1912, whereby he was convicted of unreasonably causing unnecessary suffering to certain animals, to wit, four cows, by omitting to give them proper and necessary care and attention, and was fined £5 and costs.

Mr. Trevor Lloyd appeared for the appellant, and Mr. Austin Jones for the respondent.

Counsel agreed that the necessary notices had been duly served, and the Clerk of the Peace pointed out that the Justices were not represented.

Mr. Trevor Lloyd asked who Mr. Austin Jones represented.

Mr. Austin Jones said he would also like to know who Mr. Lloyd was instructed by.

Mr. Trevor Lloyd said that as the Justices were not represented he took it for granted that Mr. Jones appeared for the Royal Society for the Prevention of Cruelty to Animals.

Mr. Jones replied that that was so, and while he appeared for the Society he realised that Mr. Lloyd appeared for the Great Western Railway Company.

Mr. Trevor Lloyd said he did not deny that, and now they knew exactly where they stood, and that the justices were not represented. As this was practically a new trial, Mr. Jones would open the case.

Mr. Austin Jones then addressed the court, and said it was a very important case for all parties, and particularly so for the appellant, who was the stationmaster at Chirk on the Great Western Railway. The proceedings at the Police Court were taken under the Protection of Animals Act, 1911, which laid it down that a person was liable to penalties if he did wantonly or unreasonably cause cruelty or omitted to do any act which caused unnecessary suffering to animals.

Mr. Trevor Lloyd said that the appellant was charged at the police court with causing unnecessary suffering to the animals. That was the whole charge.

Mr. Austin Jones quoted the section of the Act, and said that it was alleged that the appellant caused the unnecessary suffering to the four cows by not feeding, watering, or milking the cows for a period of 26 hours. It was contended by the prosecution that he had consequently brought himself under the section of the Act. The facts were that on August 30th a man named Smith consigned from Birkenhead four milking cows to a Mr. Edwards, a farmer near Chirk. The animals were not trucked by Mr Smith, but by a man named Fleming, a servant of Smith. Mr. Smith wired to Edwards that the cattle would arrive at Chirk at about two or three o'clock.

Mr. Lloyd said he admitted a wire was sent but who sent it was disputed.

Mr. Jones continuing, said that on receipt of the wire Mr. Edwards sent his man Jones to the station for the cattle, but the station-master said there were some cattle there which had to be shunted, and it was not until later in the day that the animals were so shunted. The stationmaster also refused to allow the man to take the cattle until 16/- was paid for the carriage. The man waited until about 7 o'clock and then went and told his master. It was then too late for the master to do anything, but he wrote a letter to the stationmaster telling him that unless the cattle were untrucked he would hear more about it. Mr. Edwards also wrote the same night to Smith, who turned up the next day. Mr. Edwards was in the habit of taking milk to Chirk station, and the next morning at about 9 o'clock he went down to the station with his man. He found that the cattle were still in the truck, but a partition had been removed and a porter was giving them some grass pulled from the side of the line. Mr. Edwards noticed that the cattle were in a famished or starved condition and he at once sent for Mr. Platt, a veterinary surgeon, of Llangollen, who would tell the court that the animals were suffering. That they were in a famished condition and that one was suffering from congestion of the udder. The bottom of the truck was in a dirty filthy state, and the cows were hollow and weak and had not been milked. The cow which was in pain and suffering from congestion of the udder was lame in consequence. The prosecution alleged that the stationmaster was responsible for the condition of the animals and that he had by his conduct caused them unnecessary suffering It would be proved that the cattle were perfectly healthy when they left Birkenhead and that their condition was caused through their being left so long in the truck unattended to. Although the stationmaster said he had done the best he could and that the cows had been milked and attended to, the prosecution alleged that they were not milked and that the only feed they had was the little grass given them which Mr. Edwards and his man saw in the arms of the porter when they arrived at the station. If the cows had been milked or given food there would have been evidence in the truck. The cattle would have trodden some of the grass into the manure, and had they been milked the albumen in the milk would have left a mark on the truck or on the ground, and none was found. It was submitted that what the stationmaster should have done was to have untrucked the animals and to have fed and milked them, as dairy cows were regularly fed and attended to. Had the stationmaster no accommodation at the station he could have taken the cattle to the Hand Hotel close by where there were plenty of stalls. A point had been made that there had been a difference between the stationmaster and Mr. Edwards about certain matters and that Mr. Edwards had out of spite informed the inspector of the Society for the Prevention of Cruelty to Animals, but that was not so as it was Mr. Platt who informed the inspector, considering it his duty to do so when he saw the condition of the animals. The real facts of the case were that as Mr. Edwards had not paid for the carriage of the animals the stationmaster refused to release them and so he was responsible for what occurred. It seemed that the stationmaster had thought more of the 16/- than he did of the sufferings of the animals and was guilty of very high handed conduct. The railway company could always look after themselves but poor brute beasts could not do so, and they should be protected. He submitted that the stationmaster by what he did, or omitted to do, had been guilty of callous, wanton and unreasonable conduct in not feeding, milking, and watering the animals, and he asked that the appeal should be dismissed.

Mr. Austin Jones said that Mr. Edwards was unable to attend the court that day, and he produced a doctor's certificate to the effect that he was suffering from a cold. Mr. Edwards was in court the previous day.

It was agreed that the evidence given by Mr. Edwards at the police court should be read over, and this was done.

In his evidence Mr. Edwards alleged that there were six inches of muck in the truck when he saw the animals on the morning after they arrived, and when he took out the cattle they were in a famished condition. In consequence of what he saw he sent for Mr. Platt, the veterinary surgeon. In cross-examination he admitted that he was in the habit of sending milk by train, and that he had given the company a cheque which had been returned marked "R & D." It was for 30/-, while another for 8/7 was returned marked "No Account," while a postal order he alleged he had sent to the company had never been received, but he denied that he was told his credit with the company was stopped.

The cheques were produced and handed to the court.

Edward Jones, a farm labourer, in the employ of Mr. Edwards was called and examined by Mr. Jones. He said the stationmaster or someone else connected with the station refused to allow him to take the cattle until the carriage was paid. He waited about the station until the cattle were shunted, and he left at about 7 o'clock. He went down with his master the next morning at about 9 o'clock and saw a porter giving them a handful of grass. He saw the cattle untrucked, and they were in a low condition. They had had very little food, and he saw no signs of the animals having been milked. He tried to milk the cows when he got them home, and one was in pain, but "not all that much." The condition of the animals was caused by their standing in the truck so long.

In cross-examination by Mr. Lloyd the witness said the cows suffered from garget of the udder, caused by curdled milk. Questioned as to how long it would take it to show, at first he said it would show after 40 hours, then that it would take a fortnight to show, and then said that it would show directly.

Mr. Lloyd said it was clear that the witness did not know much about the question.

In further cross-examination the witness said he had not heard Mr. Edwards threaten what he would do with the stationmaster, or that he would get the stationmaster the sack. He said he came to the conclusion that the cows had not been fed as he did not see any marks of food in the trucks. He asserted that there were six inches of filth in the trucks, but said his master had not told him to say that.

Mr. Lloyd put in a photograph of the truck, and asked the witness if he realised that six inches of muck on the floor of the truck would represent 30 cwt. He said he did not know. He added that he was sure that the cows had not been watered as they went for water as soon as they left the truck, but afterwards he said some went for water and some for grass. As to the garget of the udder, he believed it was caused through cold.

In reply to the Chairman, the witness said the cattle would have to go about a quarter of a mile to find water, but the grass was close by. He described the depth of filth in the truck as being as deep as his first finger.

Robert Smith, cattle dealer, Oswestry, said he consigned the cattle to Edwards, but he did not see them off. He had seen them previously, and they were then well and hearty. He was sure there was no garget of the udder then. He had a letter from Edwards the day after the cattle were sent off and went to Chirk to the station. He paid the carriage for them as he considered there would be harm done in keeping the cattle in the truck as they had been there 26 hours since leaving Birkenhead. He looked over the top of the truck and saw that it was very dirty. The cows looked hollow and thin, and they did not look like the same cows. He considered that their condition was due to want of feeding and want of water, and because they had been all night out in the waggon. He saw no signs of food, nor of milking, but he only looked over the side of the waggon.

In cross-examination by Mr. Lloyd the witness fenced a great deal with the question as to who owned the cattle and what was the price. He said the cattle were not sold unless Mr. Edwards could find money for them. They did not give as much milk as the dairymen of Liverpool wanted and so they were lent to Mr. Edwards for their keep, Mr. Edwards to take the milk. Fleming was to have sold the cows, but he did not do so. If Edwards had money to buy them at some future time they would be sold to him at market price. Mr. Edwards could either keep them for milk or beef. He denied that the cows were sent away because there was something wrong with them and that they were not of the best. He could not say what he wanted for them, but he knew the cost price. The best cost £16 10s.

Mr. Lloyd pressed for the price of the worst, and mentioned £9 10s., and the witness said they averaged £14 to £15. He could not say what the worst cost, it might have been £9 or £10. He contended that even a well-fed cow would become hollow if left for 30 hours without food.

William Fleming, licensed dairyman, of Liverpool, gave evidence to sending the cows by rail, and said they were in good condition. When questioned he gave particulars of the way dairy cows were fed, and the number of meals and water they had per day.

In cross-examination the witness admitted that he had signed a statement to the company that he sold the cows to Edwards through Smith, whereas they were only lent to Edwards and belonged to Smith. He added that he had sold cattle previously and sometimes had commission, but no arrangement was made in this case, although he might have had commission eventually when the cows were sold. He did not know the price. He had some entries in a book, but he had left it at home the previous night when he changed his clothes. While £9 10s. would be a low price for a cow he had as bad a cow as any sent to Chirk in his licensed shippen at Liverpool. He admitted that there were at least two lies in the statement he had given the company.

Robert Platt, M.R.C.V.S., Llangollen, was called, and said he had been in practice for seventeen years, and had had a great deal of practice with dairy cattle. He received a message from Mr. Edwards and went to Chirk station. The cattle had just been unloaded. He examined the truck and found it covered with manure from the cattle: it was in a filthy state. He saw no sign of hay trampled in the manure, but he saw a little grass trampled in the muck. He could only discover a few blades of grass. Three of the cows were grazing on the side of the road, and one cow was not. It was in great pain from inflammation of the udder. The appearance of the cows was hollow and empty, but the general condition was fair. The condition was due to the cattle not having been properly fed, the flanks were empty.

In reply to the Chairman as to whether the cattle had or had not had food recently, the witness said the flanks were empty showing that the stomachs had not sufficient food.

Replying to Mr. Jones' further questions, the witness said that the condition of the animals showed that they had not been properly fed for 24 hours. He could not say if they had been starved before that. The cow which was in great pain had inflammation of the udder, the milk was curdled which he tried to draw from the udder. He had difficulty in getting milk from her. Inflammation of the udder was due to several causes, overstocking or injury, especially overstocking or improper milking. If the cow had not been milked for 27 hours it would in his opinion be the reasonable result. If cattle were kept in a truck for 26 hours it would cause a certain amount of suffering especially to those having inflammation of the udder. Cows would lie down in proper stalls but he did not think they did so in cattle trucks. They would not suffer so much inconvenience through not lying down as from not being properly fed and milked. He saw signs of distress in the other cattle, and in his opinion they were suffering from improper feeding. The cows could not have been fed in the truck. He did not think that the cows had been milked in the truck as that could would be quite an acrobatic performance. He did not see any signs in the truck or on the ground of the cows having been milked there. Had they been so milked he would have expected to have found some signs there, and he did not. Stains of milk would remain for a long time, and they would have been trampled in. The signs would have been visible on the sides or on the ground under or by the side of the truck. He was of the opinion that the inflammation came on suddenly and was not of long standing as the cow was lame, which was the case when it was acute. If the cause was old standing the cow would not have been in such pain. Chronic cases were not so painful as new cases. He gave information to the inspector of the Society. He telegraphed for the inspector, as he considered it his duty to do so, because the animal was suffering.

In cross-examination the witness said he had a telegram from Mr. Edwards in the first place. He did not notice that the stationmaster and Mr. Edwards were cross. Mr. Edwards was not cross to the stationmaster that he noticed. He said that the cows had not been properly milked from the condition of the udders. As to whether it would not have been better to have milked the cows at the station he was under the impression that Mr. Edwards milked them to relieve a small quantity. Asked as to whether he would stake his professional reputation that the cows had not been milked three hours previously the witness said they had not been properly milked. It might have been done by

someone who was not experienced, and as to its being an acrobatic feat he asked counsel to imagine a man standing amid manure with four strange cows not fastened up trying to milk them.

The Chairman here intimated to counsel that he need not labour that point.

In further cross-examination the witness said he milked a small quantity by the station road. He did not milk into a vessel, and as to that being an acrobatic feat he would point out that three of the cattle were busily grazing. Asked if that appeared that the cattle were looking for water when they went for grass, the witness said he did not see any water about. If there was any water about the cattle went for it if thirsty; if there was water about the cattle could smell it and would go for it. It was difficult for him to say whether the cattle had been watered or not. He did not find any evidence of it. The cows were not running at the teats with milk, and it was not usual when they were overstocked to do so, as it all depended on the nature of the animal. It depended on the udder. Some cows when overstocked would lose little milk while others would lose it if not overstocked. These were ordinary dairy cows. He came to the conclusion that the oldest was about seven years. There were five rings to the horn, and adding two for the first calf he came to the conclusion that she was seven or eight years. The cow was in great pain with inflammation of the udder, and it would be difficult to draw milk in that condition. He did not think it cruel on the part of Edwards to drive the cow home as it was lame from the condition of the udder and walking it would relieve the tension on the udder. He could not say how long it would take a cow supposing it was ten years old to get into that condition from the time it was milked. He would have to know whether the cow was recently calved or getting dry. He did not quite agree as to there being six inches of muck in the truck, but there was a tremendous lot from four cows in twenty hours. It was rather exaggerating to say there were six inches. The muck was spread equally over the floor, and he examined it carefully and he saw very little food. It was not true to say the cows had been fed. If the food were put in buckets it would have left marks. Asked whether he agreed that garget of the udder might be in a cow without any external signs, the witness said tuberculous garget might be there but not acute garget. Asked how it would show itself, he said there would be heat in the first place, swollen glands, tenderness, and pain. Asked to define mammitis he said it was the same thing as garget, it was inflammation of the mammary vessels. He did not think that it existed when the cows left Liverpool. This was too acute for it to have existed so long. £9 10s. was a small price for a cow, but it depended on its condition, its milking capacity, and whether in milk. A cow at that price might have a very small milking capacity. He did not say there would be something wrong as the cow might not be properly developed. The average price was £16 upwards, if with calf £20. These were not pedigree cattle, but half-bred, three roans and one red. Asked how long it would take for the hollowness to show, the witness said it would commence as soon as the cow commenced to chew the cud, and go on until part of the rumen was empty. He did not see the cows chewing the cud. Asked whether emptiness of the rumen showed soon he said he had known cattle starve to death with the rumen half full. Ruminating was suspended as soon as the stomach was half-empty. The capacity of the rumen was about 20 to 30 gallons. He did not think that the cattle suffered through being out in the truck but through improper feeding and milking.

Inspector Henry Mutton of the R.S.P.C.A., said he went to see the cows on hearing from Mr. Platt, and found one of them lying down on some straw. With the assistance of Mr. Edwards he tried to get it up, but it got up with difficulty. He felt its udder, it was hot and tender and the veins were swollen. It was with difficulty the cow was got to walk. It was then 2 o'clock in the afternoon and he noticed it was not chewing the cud. It had been recently milked. He afterwards saw Owens, who said he would not let Edwards have the cows as he owed 16/- for carriage. Owens also said he had fed and milked the cows the best he could.

In cross-examination, Mr. Lloyd drew the witness's attention to the fact that at the police court he had not stated that he noticed the cow was not chewing the cud, and he replied that he was not asked. Mr. Lloyd then reminded him that he had not been asked that day, but evidently heard references made to chewing the cud and mentioned it. The witness said his reference to it had nothing to do with what he had heard that day. He did not mention it before as the evidence was strong enough. He took particular notice of it at the time but did not mention it to the magistrates.

This was the case for the respondents.

(To be concluded.)

DISEASES OF ANIMALS ACTS 1894 TO 1911, SUMMARY OF RETURNS.

Period.		Anthrax. Outbreaks Confirm'd	Anthrax. Outbreaks Reported	Anthrax. Animals Confirm'd	Anthrax. Animals Reported	Foot-and-Mouth Disease. Outbreaks	Foot-and-Mouth Disease. Animals.	Glanders † (including Farcy) Outbreaks	Glanders † (including Farcy) Animals.	Parasitic Mange. Outbreaks	Parasitic Mange. Animals.	Sheep Scab. Outbreaks	Swine Fever. Outbreaks.	Swine Fever. Slaughtered. *
GT. BRITAIN. Week ended	Jan. 4	11		14				5	15	81	189	15	18	629
Corresponding week in	1912	19		24				6	11	220	604	20	49	393
	1911	10		10				5	8			27	31	316
	1910		36		40			5	12			50	32	90

† Counties affected, animals attacked: Berks 1, Derby 11, London 3.

Board of Agriculture and Fisheries, Jan. 7, 1913.

IRELAND. Week ended	Jan. 4	...	...	...	...	...	...	...	...	Outbreaks 9		21	5	35
Corresponding Week in	1912 ...	1	1	...	...	...	...	...	...	4		21	3	5
	1911 ...	...	...	...	...	...	...	...	...	1		8	4	17
	1910 ...	...	...	...	...	...	...	...	...	4		27	...	85

† These figures include animals slaughtered and found affected on post-mortem examination.

Department of Agriculture and Technical Instruction for Ireland, (Veterinary Branch), Dublin, Jan. 6, 1913

NOTE.—The figures for the Current Year are approximate only.

* As Diseased or Exposed to Infection

New Secretary of the Board of Agriculture.

We are officially informed that Sir Sydney Olivier, K.C.M.G., Governor of Jamaica, has been appointed to be Permanent Secretary of the Board of Agriculture and Fisheries.

Sir Sydney Olivier, who succeeds Sir Thomas H. Elliott, was appointed Governor of Jamaica and created a K.C.M.G. in 1907. He was born in 1859, and, after being educated at Tonbridge School and at Corpus College, Oxford, entered the Colonial Office (heading the open competition) in 1882. From 1890 to 1891 he was Colonial Secretary to British Honduras and Auditor-General of the Leeward Islands in 1895-96. In the following year he acted as private secretary to Lord Selborne, and in 1897 was appointed a member of the West India Royal Commission. He was sent to Washington in 1898 to assist in the Reciprocity negotiations on behalf of the West Indian Colonies. From 1899 to 1904 he was Colonial Secretary of Jamaica and was Acting Governor in 1900, 1902, and 1904. Between that date and his appointment to the Governorship Sir Sydney Olivier was Principal Clerk in the West African and West Indian Department of the Colonial Office. His salary as Governor of Jamaica has been £5,000 a year, whereas in his new post he will receive a salary of £1,500.

From 1886 to 1890 Sir Sidney Olivier was secretary of the Fabian Society, and, amongst his numerous publications, he has contributed to Fabian Essays and Fabian Tracts.—*The Times*.

The appointment of Sir Sydney Olivier as the Permanent Secretary of the Board of Agriculture is an experiment of the daring order, and should result in the infusion of an entirely new spirit into the department. Sir Sydney Olivier comes to his new work with no special experience of agriculture, but with a reputation for sound sense and administrative vigour won in a long connection with the Colonial Office and as Governor of Jamaica. He is one of the men in the Civil Service who are capable of original things, and should prove invaluable in seconding the President of the Board in the progressive policy which he has shown a disposition to adopt. Things in the past have got rather into groove at the Board of Agriculture, and the bringing in of an outside administrator of the first order should help to change the whole spirit of the office.—*The Westminster Gazette*.

REVIEWS.

THE BEGINNER'S GUIDE TO THE MICROSCOPE.—By CHAS. E. HEATH, F.R.M.S. Pp. 119. Price 1/- net. (Percival Marshall & Co., 26-29 Poppin's Court, Fleet Street, London, E.C.)

This little book, as its title indicates, is designed to serve the absolute novice in microscopy as a first elementary introduction to the subject. Its contents therefore comprise a variety of subjects—the instrument itself and its chief accessories, the choice, use, and care of a microscope, the formation of images, critical and dark ground illumination, mounting, the examination of unmounted objects, microscopical recipes, and some hints upon the use of the microscope at the seaside and upon microscopic aquaria. There are between forty and fifty illustrations, chiefly figures of microscopes and apparatus, and diagrams showing the use of the latter.

The whole work is of course exceedingly rudimentary, and may be dealt with in a few words. It is well and pleasantly written; and to a certain extent—especially in the sections upon the actual use of the microscope, and upon optics—it will undoubtedly be useful to the veterinary student just beginning to use the instrument, but it must be noted that within its small space it includes many subjects—such as the binocular microscope, polariscopy, the paraboloid and spot lens, and the examination of opaque objects by direct light—which may safely be neglected by the veterinary student. On the other hand, as it deals solely with the use of low powers upon objects in favour amongst amateur microscopists, it in many respects falls short of the earliest requirements of veterinary work. It is likely to be more useful to those proposing to take up the microscope as a hobby than to those commencing professional studies with it. But within its limitations, it may safely be said that it will repay its trifling cost to even the veterinary student who is obliged, as many are, to begin microscopical work without any previous knowledge of its rudiments.

THE MICROSCOPE AND SOME HINTS ON HOW TO USE IT. E. LEITZ. London office: (Oxford House, 9 Oxford Street, W.)

In this little booklet, the firm of Leitz have attempted "to furnish a first introduction to a more advanced use of the microscope," affording the research worker "only so much practical knowledge as will ensure a satisfactory measure of success in its use." In other words, the idea is to provide the scientific investigator with a condensed summary of the working principles of microscopy. Such a book is not unnecessary; for it is undeniable that many medical men and veterinary surgeons attempt research work with only a very vague knowledge of microscopic optics in particular. These will find the present little volume a great help.

After an initiatory and very short description of the microscope itself, about three pages are devoted to tracing the path of a pencil of light through the tube and lenses of the instrument. This is followed by longer sections upon the complex questions of aperture and resolving power, both of which of course require very careful reading, but are written as clearly as the nature of the subject will allow.

Then we have succeeding sections of varying length upon magnification, illumination, objectives, eye pieces, focussing, and micrometry, with a concluding page of general hints for the practical use of the microscope. Naturally, the figures of apparatus, tables of powers and apertures, etc., the firm's own products are chosen as illustrative examples, but otherwise there is little of advertisement in the book. It is a solid, concise little guide to the main principles of microscopic optics, and will be of great use to many who, while not being expert all round microscopists, yet more or less frequently require to make serious use of the microscope in their work.

W. R. C.

The Live Stock Journal has again collected from butchers reports upon the carcases of exhibits in the cattle and sheep classes at last month's Smithfield Show. Almost without exception, the quality of the meat is well spoken of, there being about the right proportions of lean and fat, while the meat was firm and was free from waste. The majority of the cattle exhibits yielded carcases weighing from 63 per cent. to 70 per cent. of their gross live weight, and two prominent prize animals exceeded 70 per cent. The best return so far, was 74·20 per cent. by the huge Hereford steer which won the second prize in the senior class for Sir John Cotterell. This bullock, at 2 years 9 months 9 days, weighed just over 19½ cwt., having the extraordinary daily gain in live weight of 2·16lb. He was the heaviest animal in the hall, and a carcase weight only a fraction below the best ever recorded at Smithfield is wonderful for an animal of his size.

Personal.

At the first winter meeting of the Khartoum Racing Club, held recently, four out of the five races on the first day fell to officers of the Veterinary Service, among them the Kerreri Cup, won by Major Carr's "Greyleg" ridden by Capt. F. Fail.

Presentation.

An interesting presentation took place on Friday afternoon, Jan. 3. at the Lairages, when Mr. J. W. T. Moore, F.R.C.V.S., was the recipient of a gold signet ring and handsome rose bowl (the latter for Mrs. Moore) on the occasion of his retirement from the Lairages. Mr. Moore, who is the principal veterinary officer of the Board of Agriculture at Liverpool, has been connected with the Woodside Lairages since 1879, when they were first opened, except from April, 1885, to May, 1901, when he was transferred to Newcastle. He was due for retirement under the age limit at the beginning of September last, but at the request of the Board of Agriculture, and owing to strenuous times, he consented to remain on duty till the end of the year. The total number of oxen dealt with by Mr. Moore during his period was 2,808,000, sheep 2,072, and pigs 85,000. The foreign trade reached its summit in 1904, when 279,000 oxen and 275,000 sheep were landed, but declined steadily after that, the year 1912 being the lowest on record, when only 19,000 oxen and 14 000 sheep were landed. Since the 8th July last, however, Irish cattle have been landed, and the year bids fair to exceed even the best year of the foreign trade. Up to the end of last year 140,000, oxen and 335,000 sheep have been landed from Ireland.

Mr. Roddick, in making the presentation on behalf of the Foreign Cattle Traders' Association, said Mr. Moore had been with the trade from the very start, and he hoped he would live for many years to enjoy his well-earned rest. He was sorry that Mr. Fraser, the President, could not be there to make the presentation, but he (the speaker) sincerely trusted that their present would remind Mr. Moore of the days he had spent at the Lairages. (Applause).

Mr. Brown said they were all very glad to have the opportunity to make the testimonial to Mr. Moore, but on the other hand the Association was sorry to see him go. Everything in connection with Mr. Moore had been very pleasant, and he wished Mr. Moore many happy years of retirement. (Applause).

Mr. Robinson, as one of the oldest associates of the Lairages, endorsed all that had been uttered. Mr. Moore, he said, had done his duty nobly, and he often wondered how he had kept up with the very strenuous work. He wished him good health and long life. (Applause).

Mr. McCracken, wharf superintendent of the Mersey Docks and Harbour Board, said it was a matter for regret when he heard that Mr. Moore was going. He had known him since before the Lairages were opened, when cattle were landed at the Huskisson Dock, and they both had seen the trade rise and fail. He wished Mr. Moore and his wife long life and happiness. (Applause).

Mr. Moore said he was very deeply indebted to all the subscribers for the magnificent gifts to himself and Mrs. Moore. They had all seen a great many changes at the Lairages, but he hoped he would live to see the day when they would be full again. In his successor they would find at man who would do all he could to further the interests of the Lairages. He (the speaker) had always received every kindness and help from everyone connected with the business, and he wished to thank them for that valuable help. (Applause).

A vote of thanks to Mr. Roddick for presiding concluded the proceedings.—*The Birkenhead News.*

ARMY VETERINARY SERVICE.

Extract from *London Gazette.*

War Office, Whitehall, Jan. 3.

Regular Forces. Army Veterinary Corps.

Capt. C. H. H. Jolliffe is restored to the establishment. Dated Dec. 30 1912.

Jan. 7.

Qr.-mr. and Hon. Lieut. R. C. Fenton, half-pay list, is placed on retired pay. Dated Dec. 26, 1912.

Maj. F. U. Carr, A.V.C., who holds the appointment of Principal Veterinary Officer, Egyptian Army, has been granted the temporary rank of Miralai (Colonel).

The following officers arrived from India on the dates stated against their names and have been posted to the stations as under :—

Capt. T. Bone arrived 27th Dec., and Capt. W. N. Rowston on 2nd Jan. ; they have been posted to Dublin.

Capt. H. C. Stewart arrived 2nd Jan. posted to Tidworth.

Capt. W. J. Dale has been transferred from Woolwich to Aldershot for duty.

OBITUARY

William Reynolds Jermyn. M.R.C.V.S., Clifton, Bristol
Lond : April, 1865.

The late Mr. W. R. Jerymn, whose death is reported, at the age of 72, was an old Army man, and was a familiar figure driving throughout the streets of Bristol, seated on the left side of his pony trap. He was to be seen at all hours of the day and night in and out from the country on his professional visits. For very many years Mr. Jermyn had occupied the premises in Queen's Road, Clifton, with large yard at the back of the old house which formerly stood on the site of the bank and shops immediately opposite the Queen's Hotel. At the time it was said that the old villa was haunted by the ghost of a white lady, and crowds used to assemble nightly in front of it. Mr. Jermyn was accounted a most skilful surgeon, and his services were greatly in request, both in town and country. A kindly, genial, though apparently gruff-mannered man, his weather-beaten face and bent figure will be much missed by the older generation, and perhaps by the younger who knew him.

The interment took place on Tuesday.

Robert Wilson, M.R.C.V.S., 82 George Street, Glasgow
Graduated, Glas : April. 1867.

Mr. Wilson died on Dec. 29th, from cancer of the throat. Aged 61 years.

VETERINARY HISTORY OF THE WAR IN SOUTH AFRICA.

Sir,

My apologies are due to Mr. Huband, and many others, for failing to record their war service. The fault does not really lie on my shoulders ; there have only been odd notes and memory to draw upon.

If those who have served in the war will kindly let me have a record of their service, in response to my advertisement, many gaps will be filled.—Yours faithfully,

The Editor.

Original articles and reports should be written on one side of the paper only and authenticated by the names and addresses of writers, not necessarily for publication.